DOCUMENT RESUME

ED 100 969 TM 004 086

TITLE	Technical Report on Development of USES Specific Aptitude Test Battery for Ward Clerk (medical ser.) 219.388.
INSTITUTION	Manpower Administration (DOL), Washington, D.C.
REPORT NO	S-239R74
PUB DATE	Aug 74
NOTE	16p.
EDRS PRICE	MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS	*Aptitude Tests; *Employment Qualifications; *Hospital Personnel; Job Analysis; Occupational Information; *Personnel Evaluation; Statistical Analysis; Test Validity
IDENTIFIERS	*General Aptitude Test Battery

ABSTRACT

Research which resulted in the development of the Specific Aptitude Test Battery for use in selecting inexperienced or untrained individuals for training as ward clerks is described. Occupational norms in terms of minimum qualifying scores for the aptitude measures which predict job performance were established. The General Aptitude Test Battery and a descriptive rating scale completed by supervisors were administered to 5 males and 180 females employed as ward clerks by various hospitals throughout the country. Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of various combinations of aptitudes, at trial cutting scores, differentiated between 64 percent of the sample considered to be good workers and 36 percent considered to be poor workers. Cutting scores of 75 in general learning ability, 75 in numerical aptitude, 95 in clerical perception, and 85 in motor coordination provided the best standard of evaluation. Statistical data, names of hospitals participating, job description, and supervisor's rating scale are included. (SM)

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Technical Report on Development of USES Specific Aptitude Test Battery

For

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Ward Clerk (medical ser.) 219.388

S-239R74

Developed in Cooperation with the
Alabama, Alaska, California, Georgia, Illinois, Louisiana, Massachusetts, Minnesota, North Carolina, Oklahoma, Oregon, Rhode Island and South Carolina State Employment Services

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TM 004 086

Manpower Administration
U. S. Department of Labor

August 1974

Development of USES Specific Aptitude Test Battery S-239R74

For

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Ward Clerk (medical ser.) 219.388

RESEARCH SUMMARY

This report describes the research which resulted in the development of the following Specific Aptitude Test Battery for use in selecting inexperienced or untrained individuals for training as Ward Clerks:

Aptitudes	Cutting Scores
G - General Learning Ability	75
N - Numerical Aptitude	75
Q - Clerical Perception	95
K - Motor Coordination	85

Sample:
Five males and 180 females employed as Ward Clerks by various hospitals (see Appendix 1). A total of 86 were minority group members (81 Blacks, 1 American indian, 2 Spanish Surnamed, 1 Oriental, 1 French Canadian) and 99 were nonminority group members. The geographic distribution is shown in Table 1.

TABLE 1

Geographic Distribution

	Minority	Non-minority	States
North	22	30	Illinois, Massachusetts, Minnesota, Rhode Island
South	42	32	Alabama, Georgia, Louisiana, North Carolina, Oklahoma, South Carolina
West	22	37	Alaska, California, Oregon
Total	86	99	

Criterion:
Supervisory ratings. Criterion data were collected in 1973.

Design:
Concurrent (test and criterion data were collected at approximately the same time).

Concurrent Validity:
Phi coefficient for total sample = .27 ($P/2 < .0005$)
Phi coefficient for minority subsample = .27 ($P/2 < .01$)
Phi coefficient for the Black subsample = .25 ($P/2 < .025$)
Phi coefficient for nonminority subsample = .21 ($P/2 < .025$)

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Effectiveness of Battery for Total Sample:
For the total sample, 64% of the nontest-selected individuals used for this study were in the high criterion group; if they had been test-selected 72% would have been in the high criterion group. 36% of the nontest-selected individuals used for this study were in the low criterion group; if they had been test-selected 28% would have been in the low criterion group. The effectiveness of the battery is shown in Table 2.

TABLE 2

Effectiveness of Battery for Total Sample

	Without Tests	With Tests
High Criterion Group	64%	72%
Low Criterion Group	36%	28%

Comparison of Minority and Nonminority Groups:
No differential validity for this battery was found.

The difference between the phi coefficients for minority and nonminority group members is not statistically significant (CR = .47). The battery is fair to minority group members, since the proportion of minority group members who met the cutting scores approximated the proportion who were in the high criterion group; 55% of the minority group members met the cutting scores and 58% were in the high criterion group.

The difference between phi coefficients for Black and nonminority groups is not statistically significant (CR = .32). The battery is fair to Blacks since the proportion of Blacks who met the cutting scores approximated the proportion who were in the high criterion group; 53% of the Blacks met the cutting scores and 58% were in the high criterion group.

JOB ANALYSIS

A job analysis was performed by observation of the workers' performance on the job and in consultation with the workers' supervisors. On the basis of the job analysis, the job description shown in Appendix 3 was prepared which was used to (1) select an experimental sample of workers who were performing the job duties; (2) choose an appropriate criterion or measure of job performance; (3) determine which aptitudes are critical, important, or irrelevant to job performance (see Tables 3 & 7); and (4) provide information on the applicability of the test battery resulting from this research.

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TABLE 3

Qualitative Analysis
Based on the job analysis, the aptitudes indicated appear to be important to the work performed

Aptitude	Rationale
G - General Learning Ability	Required to make independent judgments regarding task priorities; to integrate and interpret informational and situational data and promptly respond to these inputs.
V - Verbal Aptitude	Must read physician's notes and nurse's summaries, complete charts and requisitions, and communicate with callers, patients and staff; and accurately record or relay verbal material.
N - Numerical Aptitude	Required to maintain inventory and order sufficient supplies and drugs to maintain full stock.
Q - Clerical Perception	Required to quickly and accurately check and post information on charts.

EXPERIMENTAL TEST BATTERY

All 12 tests of the GATB, B-1002B were administered during 1973.

CRITERION

The immediate supervisor rated each worker. Two ratings were obtained from each supervisor with an interval of two weeks between the ratings. The ratings were obtained by means of personal visits of State test development analysts who explained the rating procedure to the supervisors. Since sample member's test scores are confidential, supervisors were not aware of the individual's test performance at the time the ratings were completed. It was not possible to determine if minorities were rated higher than nonminorities when rated by a minority supervisor since only three nonminority group members were rated by minority group raters.

A descriptive rating scale was used. The scale (see Appendix 2) consists of 6 items. Five of these items cover different aspects of job performance. The sixth item is a global item on the Ward Clerk's "all-around" ability. Each item has five alternatives corresponding to different degrees of job proficiency. For the

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purpose of scoring the items, weights of 1 to 5 were assigned to the responses. The total score on the rating scale is the sum of the weights for the six items. The possible range for each rating is 6-30.

A review of the job description indicated that the subjects covered by the rating scale were directly related to important aspects of job performance:

A. Amount of work: High productivity is essential in maintaining up-to-date medical records as an aid to insuring the well-being of the patient.

B. Quality of work: Appropriate validation and recording of data must be accomplished, and proper response must be made to phone queries and request for directions.

C. Accuracy of work: Accuracy of record maintainance is essential to the well-being of the patient.

D. Knowledge of work: A knowledge of systems and procedures is essential to adequate function.

E. Variety of job duties performed: Must be able to cope with a wide range of functions.

F. "All-around" ability: The Ward Clerk's value to the employer involves a combination of the aspects of job performance listed above.

A reliability coefficient of .78 was obtained between the initial ratings and the re-ratings, indicating a significant relationship. Therefore, the final criterion score consists of the combined scores of the two ratings. The possible range for the final criterion is 12-60. The relationship between the criterion and age, education and job experience is shown in Table 4.

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TABLE 4

Means, Standard Deviations (SD) and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

	Total Sample Mean	SD	r	Mean Black	Mean Nonminority
Age (years)	33.7	11.5	.029	29.8	36.9
Education (years)	12.5	1.2	-.061	12.6	12.4
Experience (months on current job)	37.6	41.2	.088	30.1	41.9

Criterion means, standard deviations and ranges are shown in Table 5 for the total sample and for the Black and nonminority subsamples.

TABLE 5

Criterion Means, Standard Deviations and Ranges

	Total Sample	Black Sample	Nonminority Sample
Mean	45.2	44.5	45.9
Standard Deviation	8.3	7.6	8.5
Range	22-60	24-60	22-60

About one-third of the workers are considered to be marginal workers. Therefore, the criterion distribution was dichotomized so as to include as close as possible to one-third of the sample in the low criterion group and the remainder in the high criterion group. The criterion cutting score was set at 43 which places 36% in the low criterion group and 64% in the high criterion group. It was not possible to place precisely one-third of the workers in the low criterion group because of the nature of the criterion distribution.

SAMPLE

The sample consisted of 180 females and 5 males employed as Ward Clerks in various hospitals in Alabama, Alaska, California, Georgia, Illinois, Louisiana, Massachusetts, Minnesota, North Carolina, Oklahoma, Oregon, Rhode Island and South Carolina (see Appendix 1). A total of 86 were minority group members (81 Blacks, 1 American Indian, 2 Spanish Surnamed, 1 Oriental and 1 French Canadian) and 99 were nonminority group members. The means and standard deviations for age, education and experience of sample members are shown in Table 4. Pre-employment tests (Wonderlic Personnel Test or State merit examination) had been given to a small proportion of the sample; the remainder of the sample was nontest-selected. All workers had been employed at least one month in a job whose duties are similar to those found in the job description in Appendix 3.

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STATISTICAL RESULTS

TABLE 6

Statistical Results for Total Sample

N=185

Aptitude	Mean	SD	Range	r
G - General Learning Ability	93.1	17.1	60-146	.209**
V - Verbal Aptitude	98.8	16.3	70-141	.197**
N - Numerical Aptitude	92.0	17.3	51-144	.211**
S - Spatial Aptitude	94.2	18.1	61-137	.110
P - Form Perception	105.1	18.6	57-152	.180*
Q - Clerical Perception	113.4	16.1	66-157	.240**
K - Motor Coordination	109.4	14.2	62-144	.202**
F - Finger Dexterity	94.7	21.8	42-170	.043
M - Manual Dexterity	98.7	23.9	13-163	.026

*Significant at the .05 level
**Significant at the .01 level

TABLE 6a

Statistical Results for Black Subsample

N=81

Aptitude	Mean	SD	Range	r
G - General Learning Ability	82.7	12.2	60-115	.143
V - Verbal Aptitude	89.0	11.7	70-129	.167
N - Numerical Aptitude	84.5	15.2	52-127	.125
S - Spatial Aptitude	86.9	13.5	61-124	-.004
P - Form Perception	100.5	15.6	67-134	.143
Q - Clerical Perception	108.3	16.5	66-153	.256*
K - Motor Coordination	108.1	13.6	74-144	.218
F - Finger Dexterity	92.8	18.3	56-141	-.124
M - Manual Dexterity	93.9	19.6	54-151	.061

*Significant at the .05 level

TABLE 6b

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Statistical Results for Nonminority Subsample

N=99

Aptitude	Mean	SD	Range	r
G - General Learning Ability	101.5	16.2	63-146	.210*
V - Verbal Aptitude	107.2	15.1	74-141	.171
N - Numerical Aptitude	97.8	16.7	51-144	.220*
S - Spatial Aptitude	99.7	19.2	61-137	.153
P - Form Perception	108.2	19.4	57-152	.181
Q - Clerical Perception	117.6	14.7	84-157	.177
K - Motor Coordination	110.6	14.7	62-142	.128
F - Finger Dexterity	96.4	24.0	42-170	.096
M - Manual Dexterity	102.8	26.2	13-163	-.019

*Significant at the .05 level

Table 7 summarizes the qualitative analyses and statistical results shown in Tables 3 and 6 and shows the aptitudes considered for inclusion in the battery.

TABLE 7

Summary of Qualitative and Quantitative Data for Total Sample

	Aptitudes								
Type of Evidence	G	V	N	S	P	Q	K	F	M
"Critical" on Basis of Job Analysis									
"Important" on Basis of Job Analysis	X	X	X			X			
"Irrelevant" on Basis of Job Analysis									
Relatively High Mean					X	X	X		
Relatively Low Standard Deviation							X		
Significant Correlation with Criterion	X	X	X		X	X	X		
Aptitudes Considered for Inclusion in the Battery	G	V	N		P	Q	K		

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The information in Table 7 indicates that the following aptitudes should be considered for inclusion in the battery: G, V, N, P, Q and K. The objective is to develop a battery of 2, 3 or 4 aptitudes with cutting scores set at five-point intervals at the point (a) where about the same percent will meet the cutting scores as the percent placed in the high criterion group and (b) which will maximize the relationship between the battery and the criterion. The cutting scores are set at approximately one standard deviation below the mean aptitude scores of the sample, with deviations above or below these points to achieve the objectives indicated above.

The following battery resulted:

Aptitudes	Cutting Scores
G - General Learning Ability	75
N - Numerical Aptitude	75
Q - Clerical Perception	95
K - Motor Coordination	85

VALIDITY OF BATTERY

TABLE 8
Validity of Battery for Total Sample

	Below Cutting Scores	Meeting Cutting Scores	Total
High Criterion Group	24	94	118
Low Criterion Group	31	36	67
Total	55	130	185

Phi coefficient = .27
Significance level = P/2 < .0005

TABLE 8a

Validity of Battery for Minority Subsample

	Below Cutting Scores	Meeting Cutting Scores	Total
High Criterion Group	17	33	50
Low Criterion Group	22	14	36
Total	39	47	86

Phi coefficient = .27
Significance level = P/2 < .01

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TABLE 8b
Validity of Battery for Black Subsample

	Below Cutting Scores	Meeting Cutting Scores	Total
High Criterion Group	17	30	47
Low Criterion Group	21	13	34
Total	38	43	81

Phi coefficient = .25
Significance level = P/2 < .025

TABLE 8c
Validity of Battery for Nonminority Subsample

	Below Cutting Scores	Meeting Cutting Scores	Total
High Criterion Group	7	61	68
Low Criterion Group	9	22	31
Total	16	83	99

Phi coefficient = .21 (Yates' corrected)
Significance level = P/2 < .025

OCCUPATIONAL APTITUDE PATTERN

This occupation was incorporated into OAP-17 in Section II of the 1970 edition of the Manual for the USES General Aptitude Test Battery with a double asterisk (**) because the battery did not contain the same aptitudes as included in OAP-17 but a significant phi coefficient was obtained between the criterion and OAP-17 cutting scores of G-90, V-90, and Q-100. A phi coefficient of .15 (P/2 < .025) was obtained.

APPLICABILITY OF BATTERY

The aptitude test battery may be used to select inexperienced applicants for the job described in Appendix 3.

APPENDIX 1

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HOSPITALS CONTRIBUTING SAMPLES

1. Cobb Memorial Hospital, Phenix City, Alabama
2. East End Memorial Hospital, Birmingham, Alabama
3. Good Samaritan Hospital, Selma, Alabama
4. Mobile General Hospital, Mobile, Alabama
5. St. Vincent Hospital, Birmingham, Alabama
6. Alaska Native Health Area Hospital, Anchorage, Alaska
7. Hospital of the Good Samaritan, Los Angeles, California
8. Kaiser Hospital, Panorama City, California
9. Martin Luther King General Hospital, Los Angeles, California
10. Central State Hospital, Milledgeville, Georgia
11. Michael Reese Hospital, Chicago, Illinois
12. Charity Hospital of Louisiana, New Orleans, Louisiana
13. Earl K. Long Memorial Hospital, Baton Rouge, Louisiana
14. Boston City Hospital, Boston, Massachusetts
15. St. John's Hospital, St. Paul, Minnesota
16. Rex Hospital, Raleigh, North Carolina
17. Sampson County Memorial Hospital, Clinton, North Carolina
18. Scotland Memorial Hospital, Laurinburg, North Carolina
19. Mercy Hospital, Oklahoma City, Oklahoma
20. Salem Hospital, Salem, Oregon
21. U. S. Veterans Administration Hospital, Roseburg, Oregon
22. Miriam Hospital, Providence, Rhode Island
23. Rhode Island Hospital, Providence, Rhode Island
24. St. Joseph's Hospital, Providence, Rhode Island
25. Providence Hospital, Columbia, South Carolina
26. South Carolina Baptist Hospital, Columbia, South Carolina

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U.S. DEPARTMENT OF LABOR • MANPOWER ADMINISTRATION

DESCRIPTIVE RATING SCALE

SCORE _____

RATING SCALE FOR _____

D.O.T. Title and Code

Directions: Please read the "Suggestions to Raters" and then fill in the items which follow. In making your ratings, only one box should be checked for each question.

SUGGESTIONS TO RATERS

We are asking you to rate the job performance of the people who work for you. These ratings will serve as a "yardstick" against which we can compare the test scores in this study. The ratings must give a true picture of each worker or this study will have very little value. You should try to give the most accurate ratings possible for each worker.

These ratings are strictly confidential and won't affect your workers in any way. Neither the ratings nor test scores of any workers will be shown to anybody in your company. We are interested only in "testing the tests." Ratings are needed only for those workers who are in the test study.

Workers who have not completed their training period, or who have not been on the job or under your supervision long enough for you to know how well they can perform this work should not be rated. Please inform the test technician about this if you are asked to rate any such workers.

Complete the last question only if the worker is no longer on the job.

In making ratings, don't let general impressions or some outstanding trait affect your judgment. Try to forget your personal feelings about the worker. Rate only on the work performed. Here are some more points which might help you:

1. Please read all directions and the rating scale thoroughly before rating.

2. For each question compare your workers with "workers-in-general" in this job. That is, compare your workers with other workers on this job that you have known. This is very important in small plants where there are only a few workers. We want the ratings to be based on the same standard in all the plants.

3. A suggested method is to rate all workers on one question at a time. The questions ask about different abilities of the workers. A worker may be good in one ability and poor in another: for example, a very slow worker may be accurate. So rate all workers on the first question, then rate all workers on the second question, and so on.

4. Practice and experience usually improve a worker's skill. However, one worker with six months' experience may be a better worker than another with six years' experience. Don't rate one worker as poorer than another merely because of a lesser amount of experience.

5. Rate the workers according to the work they have done over a period of several weeks or months. Don't rate just on the basis of one "good" day, or one "bad" day or some single incident. Think in terms of each worker's usual or typical performance.

6. Rate only the abilities listed on the rating sheet. Do not let factors such as cooperativeness, ability to get along with others, promptness and honesty influence your ratings. Although these aspects of a worker are important, they are of no value for this study as a "yardstick" against which to compare aptitude test scores.

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NAME OF WORKER *(Print)* *(Last)* *(First)*

SEX: MALE_____ FEMALE_____

Company Job Title: _____

How often do you see this worker in a work situation?

- ☐ All the time.
- ☐ Several times a day.
- ☐ Several times a week.
- ☐ Seldom.

How long have you worked with this worker?

- ☐ Under one month.
- ☐ One to two months.
- ☐ Three to five months.
- ☐ Six months or more.

A. How much can this worker get done? (Worker's ability to make efficient use of time and to work at high speed.) (If it is possible to rate only the quantity of work which a person can do on this job as adequate or inadequate, use #2 to indicate "inadequate" and #4 to indicate "adequate.")

- ☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.
- ☐ 2. Capable of low work output. Can perform at a slow pace.
- ☐ 3. Capable of fair work output. Can perform at an acceptable pace.
- ☐ 4. Capable of high work output. Can perform at a fast pace.
- ☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of work? (Worker's ability to do high-grade work which meets quality standards.)

- ☐ 1. Performance is inferior and almost never meets minimum quality standards.
- ☐ 2. Performance is usually acceptable but somewhat inferior in quality.
- ☐ 3. Performance is acceptable but usually not superior in quality.
- ☐ 4. Performance is usually superior in quality.
- ☐ 5. Performance is almost always of the highest quality.

C. How accurate is the work? (Worker's ability to avoid making mistakes.)

- ☐ 1. Makes very many mistakes. Work needs constant checking.
- ☐ 2. Makes frequent mistakes. Work needs more checking than is desirable.
- ☐ 3. Makes mistakes occasionally. Work needs only normal checking.
- ☐ 4. Makes few mistakes. Work seldom needs checking.
- ☐ 5. Rarely makes a mistake. Work almost never needs checking.

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D. How much does the worker know about the job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with the work.)

- ☐ 1. Has very limited knowledge. Does not know enough to do the job adequately.
- ☐ 2. Has little knowledge. Knows enough to get by.
- ☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.
- ☐ 4. Has broad knowledge. Knows enough to do good work.
- ☐ 5. Has complete knowledge. Knows the job thoroughly.

E. How large a variety of job duties can the worker perform efficiently? (Worker's ability to handle several different operations.)

- ☐ 1. Cannot perform different operations adequately.
- ☐ 2. Can perform a limited number of different operations efficiently.
- ☐ 3. Can perform several different operations with reasonable efficiency.
- ☐ 4. Can perform many different operations efficiently.
- ☐ 5. Can perform an unusually large variety of different operations efficiently.

F. Considering all the factors already rated, and only these factors, how good is this worker? (Worker's all-around ability to do the job.)

- ☐ 1. Performance usually not acceptable.
- ☐ 2. Performance somewhat inferior.
- ☐ 3. A fairly proficient worker.
- ☐ 4. Performance usually superior.
- ☐ 5. An unusually competent worker.

Complete the following ONLY if the worker is no longer on the job.

G. What do you think is the reason this person left the job? (It is not necessary to show the official reason if you feel that there is another reason, as this form will not be shown to anybody in the company.)

- ☐ 1. Fired because of inability to do the job.
- ☐ 2. Quit, and I feel that it was because of difficulty doing the job.
- ☐ 3. Fired or laid off for reasons other than ability to do the job (i.e., absenteeism, reduction in force).
- ☐ 4. Quit, and I feel the reason for quitting was not related to ability to do the job.
- ☐ 5. Quit or was promoted or reassigned because the worker had learned the job well and wanted to advance.

RATED BY	TITLE	DATE
COMPANY OR ORGANIZATION	LOCATION (*City, State, ZIP Code*)	

GPO 863-716

MA 7-66
Apr. 1973

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APPENDIX 3

S-239R74

JOB DESCRIPTION

Job Title:

Ward Clerk (medical ser.) 219.388

Job Summary:

Performs a variety of clerical duties such as ordering supplies, compiling patient charts and keeping records. Keeps medical supply cabinet stocked and maintains perpetual inventory on all supplies. Directs doctors and visitors to rooms and patients.

Work Performed:

*Checks charts and keeps them up to date by posting information such as temperature, pulse and respiration from doctors' notes, nurses' summaries and laboratory reports.

Prepares regular and periodic diet orders from information relayed to the floor.

Answers telephone and intercom, and relays messages.

*Maintains full stock of all drugs and supplies; orders medical supplies and various forms from pharmacy and stock room.

Sends transfer and discharge records to office.

Orders and picks up sterilized supplies and instrument sets each morning and returns instruments each evening.

Meets new admissions and escorts them to their room.

Delivers mail and makes telephone calls for patients.

Directs doctors and visitors to rooms and patients.

*These job duties were designated as critical since they must be performed competently if the job is to be performed in a satisfactory manner. Ward Clerks spend from 50-70% of their working hours every day performing these duties.

GPO 881.157